

Notice of Allowability

Application No.

10/623,693

Examiner

Hai C Pham

Applicant(s)

MUROKH ET AL.

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Application filed 07/18/03.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☒ The drawings filed on 18 July 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 07/18/03
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows:

IN THE CLAIMS:

Claim 1:

- Line 6, changed "an" to --a--.

NOTE: The above amendment to claim 1 only corrects a typical typographical error, e.g., "an minimum level" to --a minimum level--, which is deemed not necessary to seek prior approval from the Applicant.

2. The following is an examiner's statement of reasons for allowance: Claims 1, 6, 9 and 14-16 are patentable over the prior art patents and printed publications because of the specific method of non-destructive marking of an object containing a radiation sensitive material using a laser generated radiation, the method comprising selecting said object, which includes an object substrate having an effective amount of said radiation sensitive material in a region that is generally visible, said radiation sensitive

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material requiring a minimum level of radiation flux to effect said marking, selecting a digital micro-mirror device capable of tolerating a maximum level of radiation flux, said maximum level being less than said minimum level, adjusting said mirrored face to reflect said detectable predefined pattern, generating a pulse of coherent ultraviolet radiation having a first cross-sectional area with a first level of radiation flux that is greater than said maximum level, expanding the cross-sectional area of said pulse of radiation to produce an expanded pulse of radiation, the level of said radiation flux in said expanded pulse of radiation being no greater than said maximum level, impinging said expanded pulse of radiation on said mirrored surface and allowing said mirrored surface to reflect said expanded pulse of radiation in a patterned pulse of radiation, condensing said patterned pulse of radiation to produce a condensed patterned pulse of radiation, the level of radiation flux in said condensed patterned pulse of radiation being at least as great as said minimum level, and projecting said condensed patterned pulse of radiation on said object substrate and allowing said detectable predefined pattern to form in said radiation sensitive material. The combined limitations are not taught by the art made of record alone or in combination.

Claims 2-5, 7-8, 10-13, 17-20 are allowed because they are directly or indirectly dependent from claims 1, 6, 9, 14-16 above.

The prior art made of record, Igasaki et al. (Pub. No. U.S. 2003/0010889), discloses a laser machining apparatus comprising a laser light source whose laser light output is expanded before being modulated by the reflective digital micro-mirror device,

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the modulated laser light being condensed such that a laser light with a small focal spot of high energy is obtained to mark the target object.

The prior art of record, Hewlett (U.S. 5,953,152), discloses a digital micro-mirror device for shaping an incident laser light source, a bypass portion of the energy of the incident light source being projected onto the base of the digital micro-mirror device, which is provided with a cooling system for preventing the base from being damaged.

The prior art of record, Murokh et al. (U.S. 6,776,340), discloses a laser marking of consumable articles wherein an effective amount of titanium dioxide ranging from 0.5 to 5 weight percent is present in the layer of the articles such that a quality of the marking is obtained at the maximum safe energy level.

However, none of the cited prior arts discloses the relationship between the energy level as tolerated by the digital micro-mirror and the optimum energy level for marking the article containing titanium dioxide such that none of the digital micro-mirror device and the article is damaged.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM
PRIMARY EXAMINER

September 14, 2004